What is claimed is:

1. A light conversion apparatus comprising:

a germanium-based photodiode; and

a polysilicon-based receiving electrode for receiving light to be converted by the photodiode, the receiving electrode being coupled with the photodiode, the receiving electrode permitting the received light to substantially pass through the receiving electrode to the photodiode, the photodiode being capable of converting the received light into an electrical signal.

2. The apparatus as defined by claim 1 wherein the receiving electrode is doped.

3. The apparatus as defined by claim 2 wherein the receiving electrode is doped with an n-type dopant.

4. The apparatus as defined by claim 1 wherein the photodiode has a top surface, the receiving electrode substantially covering the entire top surface of the photodiode.

5. The apparatus as defined by claim 1 further comprising a bottom electrode coupled to the photodiode, the apparatus further having a voltage between the top and bottom electrodes.

6. The apparatus as defined by claim 1 further including a waveguide coupled with the receiving electrode.

7. The apparatus as defined by claim 1 wherein the photodiode has a p-type doped region, an n-type doped region, and an intrinsic region between the two doped regions, the receiving electrode being one of n-type or p-type doped, the receiving electrode being coupled closer to the doped region of the photodiode having a like doping to it than to the doped region of the photodiode having a different doping.

8. A light conversion apparatus comprising:

a photodiode having an n-type region that is doped with n-type dopant and a p-type region that is doped with p-type dopant; and

a polysilicon-based receiving electrode doped with one of an n-type or a p-type dopant, the receiving electrode capable of receiving light to be converted by the photodiode and permitting the received light to substantially pass through it to the photodiode, the receiving electrode being coupled closer to the doped region of the photodiode having a like doping to it than to the doped region of the photodiode having a different doping.

9. The apparatus as defined by claim 8 wherein the receiving electrode is doped with an n-type dopant, the receiving electrode being coupled closer to the n-type region of the photodiode than to the p-type region of the photodiode.

10. The apparatus as defined by claim 8 wherein the photodiode is germanium based.

11. The apparatus as defined by claim 8 wherein the photodiode has a top surface, the receiving electrode substantially covering the entire top surface of the photodiode.

12. The apparatus as defined by claim 8 further comprising a bottom electrode coupled to photodiode, the apparatus further having a voltage between the top and bottom electrodes.

13. The apparatus as defined by claim 8 wherein the receiving electrode has a thickness of between about 0.1 and 0.3 microns.

14. The apparatus as defined by claim 8 wherein the receiving electrode has no less than about a ninety percent concentration of polysilicon.

15. The apparatus as defined by claim 8 wherein the receiving electrode includes polysilicon germanium.

16. A light conversion apparatus comprising:

a germanium-based photodiode; and

polysilicon-based means for receiving light to be converted by the photodiode, the polysilicon-based means permitting the received light to substantially pass through it to the photodiode, the photodiode being capable of converting the received light it receives into an electrical signal.

17. The apparatus as defined by claim 16 wherein the polysilicon-based means includes a receiving electrode comprised of at least ninety percent polysilicon.

18. The apparatus as defined by claim 16 wherein the polysilicon-based means includes doped polysilicon.

19. The apparatus as defined by claim 16 further comprising a bottom electrode having a voltage difference with the polysilicon-based means.

20. The apparatus as defined by claim 16 wherein the photodiode has a top surface, the polysilicon-based means substantially covering the entire top surface of the photodiode.